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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CHANG, AUDREY Y

ART UNIT

PAPER NUMBER

2872

DATE MAILED: 05/16/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/381,528

Applicant(s)

TAKETOMI ET AL.

Examiner

Audrey Y. Chang

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-- Th MAILING DATE of this communication appears on th cover sh et with the correspond nce address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-7, 13 and 15-18 is/are pending in the application.
- 4a) Of the above claim(s) 2, 3, 8-12, 14 and 19-66 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-7, 13 and 15-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 25, 2002 has been entered.
2. This Office Action is also in response to applicant's amendment filed on January 17, 2002, which has been entered as paper number 24.
3. By this amendment, the applicant has amended claims 4 and 13.
4. Claims 4-7 and 13-18 remain pending in this application.
5. Claims 2-3, 8-12, 14 and 19-66 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention groups, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 8.
6. The rejection to claim 4 under 35 USC 112, first paragraph, set forth in the previous Office Action is withdrawn in response to applicant's amendment .
7. The rejection to claims 13 and 15-18 under 35 USC 112, second paragraph, set forth in the previous Office Action is withdrawn in response to applicant's amendment .

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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9. Claims 4-7, 13 and 15-18 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification and the claims fail to teach how could the reflection type hologram be formed by simply having a light having information of an object, a reference light and a reconstructed image as recited in claims 4, 6-7 and 13. In general, a hologram can only be recorded by having an object light and a reference light, coherent to each other, been arranged to *intercept* and *interfere* with each other on a *hologram recording medium*. The interference effect and the recording medium are essential elements that are required in order to form a hologram.

The specification and the claims fail to teach how could the reflection type hologram formed by “a reconstructed image of the object” as recited in claims 1, 6-7 and 13. The specification and the claims also fail to disclose how could the “reconstructed image of the object” be obtained or formed.

The specification and claims fail to disclose how could a hologram dry plate “*becomes* the transmission type hologram upon diffused light having passed through the slit” as recited in claim 4.

The specification and claims fail to disclose how could the “light having information of an object is obtained by using diffused light diffusing only the width direction of a hologram dry plate”, as recited in claim 13.

Claims 5, and 15-18 inherit the rejection from their respective based claim.

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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11. Claims 4-7, 13 and 15-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 4, 6-7 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural *cooperative relationships* are among the “light having information of an object”, the “reference light” and the “reconstructed image”. The claims also fail to give *logical relationships* among the elements to give an operable device. The claims therefore are indefinite since it is not clear what are the scopes of the claims.

The phrase “reconstructed image” and the phrase “reconstructed light” recited in claims 4, 6, 7, 13 and 17 are indefinite and confusing since it is not clear if these two phrases are referred to the same thing or not.

The phrase “reconstructed light of a transmission-type hologram” recited in claims 6 and 7 is indefinite since it is not clear if this is referred to the **light used** to reconstruct the transmission type hologram or the **reconstructed image** obtained from the transmission hologram.

Claim 13 is indefinite and incomplete since it is not clear what is the relationship between the “hologram dry plate” and the reflection type hologram.

The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors. The applicant is respectfully requested to clarify **ALL** of the discrepancies and indefiniteness in the claims (*not just the ones being pointed out by the examiner*) to make the claims comply with the requirements of 35 USC 112, first and second paragraphs.

Claims 5 and 15-18 inherit the rejections from their respective based claim.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. **Claim 6 is rejected under 35 U.S.C. 102(b) as being anticipated by the patent issued to Kulick (PN. 5,757,522).**

Kulick et al teaches a *holographic display* that is comprised of a *holographic plate* (33 of Figure 7 or 77 of Figure 9) and a *light source* (56). Kulick et al teaches that the hologram recorded on the holographic plate (33 or 77) is produced by interfering a *reference light beam* with a light beam having an *object information* generated from a *transmission master hologram* (32 or 75), (please see Figures 7 or 9). Kulick et al further teaches that the transmission master hologram (32 or 75) is produced by splitting a light beam generated by a *laser light source* (20) into a reference light beam (26) and an object light beam (28) wherein the object light beam (28) is *diffusedly* reflected by a mirror (34) to the object (36). The diffusedly reflected object light beam passes through a *spatial filter* (F), which serves as the *slit*, to control the size of the light beam before it irradiates the object (36). The object light beam then *interferes* with the reference light beam (26) at the *holographic plate* (32) to create the *transmission* master hologram (32), (please see Figure 4 and columns 3-5). Kulick et al teaches that the holographic display may be either of *transmission mode* (33 Figure 7) or of *reflection mode* (77, Figure 9) wherein the object information is displayed by irradiate the holographic plate (33 or 77) with a reconstruction light beam that is the same as the reference beam used to create the holographic display (33 or 77).

Kulick et al teaches that the holographic display plate (33 or 77) may be created as a rainbow hologram wherein the holographic image of the object may be viewable by using a white light. The rainbow hologram is created by allowing only a *slit* of light from the master hologram (32) to illuminate

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the holographic plate (33 or 77). Kulick et al teaches that the confinement of the illumination may be achieved by **masking** the mater hologram using a masking plate **having apertures or slits** to create the slit beam, (please see column 4, lines 19-23). It is implicitly true that the mask having the slits or apertures must be placed adjacent to the transmission master hologram in order to confine object light beam from the master hologram to form a slit illumination.

This reference has therefore anticipated the claims.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. **Claims 4-5, 7, 13 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Kulick (PN. 5,757,522) in view of the patent issued to Odhner et al (PN.5,613,022).**

Kulick et al teaches a *holographic display* that is comprised of a *holographic plate* (33 of Figure 7 or 77 of Figure 9) and a *light source* (56). Kulick et al teaches that the hologram recorded on the holographic plate (33 or 77) is produced by interfering a *reference light beam* with a light beam having an *object information* generated from a *transmission master hologram* (32 or 75), (please see Figures 7 or 9). Kulick et al further teaches that the transmission master hologram (32 or 75) is produced by splitting a light beam generated by a laser light source (20) into a reference light beam (26) and an object light beam (28) wherein the object light beam (28) is *diffusedly* reflected by a mirror (34) to the object (36). The diffusedly reflected object light beam passes through a *spatial filter* (F), which serves as the *slit*, to

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control the size of the light beam before it irradiates the object (36). The object light beam then interferes with the reference light beam (26) at the holographic plate (32) to create the transmission master hologram (32), (please see Figure 4 and columns 3-5). Kulick et al teaches that the holographic display may be either of *transmission mode* (33 Figure 7) or of *reflection mode* (77, Figure 9) wherein the object information is displayed by irradiate the holographic plate (33 or 77) with a reconstruction light beam that is the same as the reference beam used to create the holographic display (33 or 77).

This reference has met all the limitations of the claims. Kulick et al teaches that the object light beam (26) for irradiating the object from the mirror (34) is a diffused light, (please see column 3, lines 30-35), however it does not teach that the diffusion is caused by using a ground glass. It also does not teach specifically that the diffused light passes through the slit. But it is rather common in the art to use ground glass to create diffusion light as demonstrated by the teachings of Odhner et al. Odhner et al in the same field of endeavor teaches a *holographic recording scheme* wherein the *object light* passes through a *ground glass* (112) to create a *diffused object light* which then passes through a *slit* (116) to record a *slit object image holographically* on a recording medium, (please see Figure 13). It would therefore have been obvious to one skilled in the art to apply the teachings of Odhner et al to use ground glass as an alternative diffusing means to provide diffused object light. With regard to claim 13, Odhner et al teaches that the arrangement of the slit and the ground glass causes the diffused light be generated only in the direction of the width of the holographic recording medium, (please see Figure 13 of Odhner et al).

With regard to claims 7 and 17, Kulick et al further teaches that the holographic display plate (33 or 77) may be created as a rainbow hologram wherein the holographic image of the object may be viewable by using a white light. The rainbow hologram is created by allowing only a slit of light from the master hologram (32) to illuminate the holographic plate (33 or 77). Kulick et al teaches that the confinement of the illumination may be achieved by either using a *cylindrical lens* to create a slit beam or *masking* the mater hologram using a *masking plate having apertures or slits to create the slit beam*,

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(please see column 4, lines 19-23). It is implicitly true that the cylindrical lens and the mask having the slits or apertures must be placed adjacent to the transmission master hologram in order to confine object light beam from the master hologram to form a slit illumination. But it does not teach that both the mask and the cylindrical lens are used to create the slit beam. However such modification would have been obvious to one skilled in the art since both of the elements create confined slit beam to use both of them would require only routine skilled in the art and rearranging the elements in the display.

With regard to claims 16 and 18, Kulick et al teaches that the reference light beam is in a direction orthogonal to the diffused light beam, (please see Figure 7 and 9) however it does not teach explicitly that the reference light for creating the holographic plate is provided by having a plurality of light superposing on one another. However as long as the reference light is kept in coherence with the object light beam or the diffused light beam the reference may easily be modified to have a superposition of a plurality of light beams for the benefit of providing an alternative way of creating a reference light beam.

Response to Arguments

16. Applicant's arguments filed on January 17, 2002 have been fully considered but they are not persuasive. The amended claims have been fully considered and they are rejected for the reasons stated above.

17. In response to applicant's argument concerning the cited Kulick et al reference, the examiner respectfully advises the applicant to study Figure 9 of Kulick et al, which discloses a recording of **reflection hologram** by using a transmission type master hologram.

18. In response applicant's argument, which states that the spatial filter of Kulick et al is a **lens** not a slit, the examiner respectfully disagrees since a spatial filter is **completely different** from a lens. It is well known in the art that a spatial filter always includes an aperture or slit. In response to applicant's argument stating that "the function of the spatial filter is to enlarge a beam is incompatible to the function

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of a slit to prevent a beam from enlarging” the examiner respectfully disagrees and wishes to indicate that the statement is simply **wrong**. A light beam will always be expanded from a slit or an aperture, even the applicant’s own disclosure shows that the light beam is expanded after passes through a slit, (please see Figure 11A, 11B and 15A of the instant application).

19. The instant application seems to disclose a hologram recorded by the method known in the art as two-stepped method. Such method is extremely well known in the art. The first step is to record a master hologram by creating an object light by illuminating the object and directing the object to interfere with a reference at the recording medium of the master hologram to record the object information holographically as the master hologram. The second step is to reconstructed the recorded object information from the master hologram by illuminating the master hologram with a reconstructing light beam and the reconstructed light from the master hologram serves as the light having object information that is interfered with another reference beam in a hologram-recording medium to create the final hologram. The claims as stand now seem be confused with the two-stepped process.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 703-305-6208. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

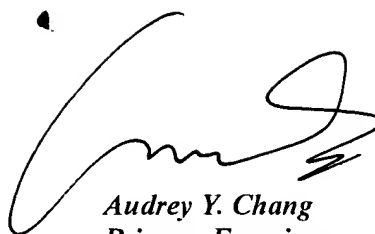
If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Cassandra Spyrou can be reached on 703-308-1637. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

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A handwritten signature in black ink, appearing to read 'Audrey Y. Chang', with a stylized flourish at the end.

Audrey Y. Chang
Primary Examiner
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A. Chang, Ph.D.
May 14, 2002